



Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching



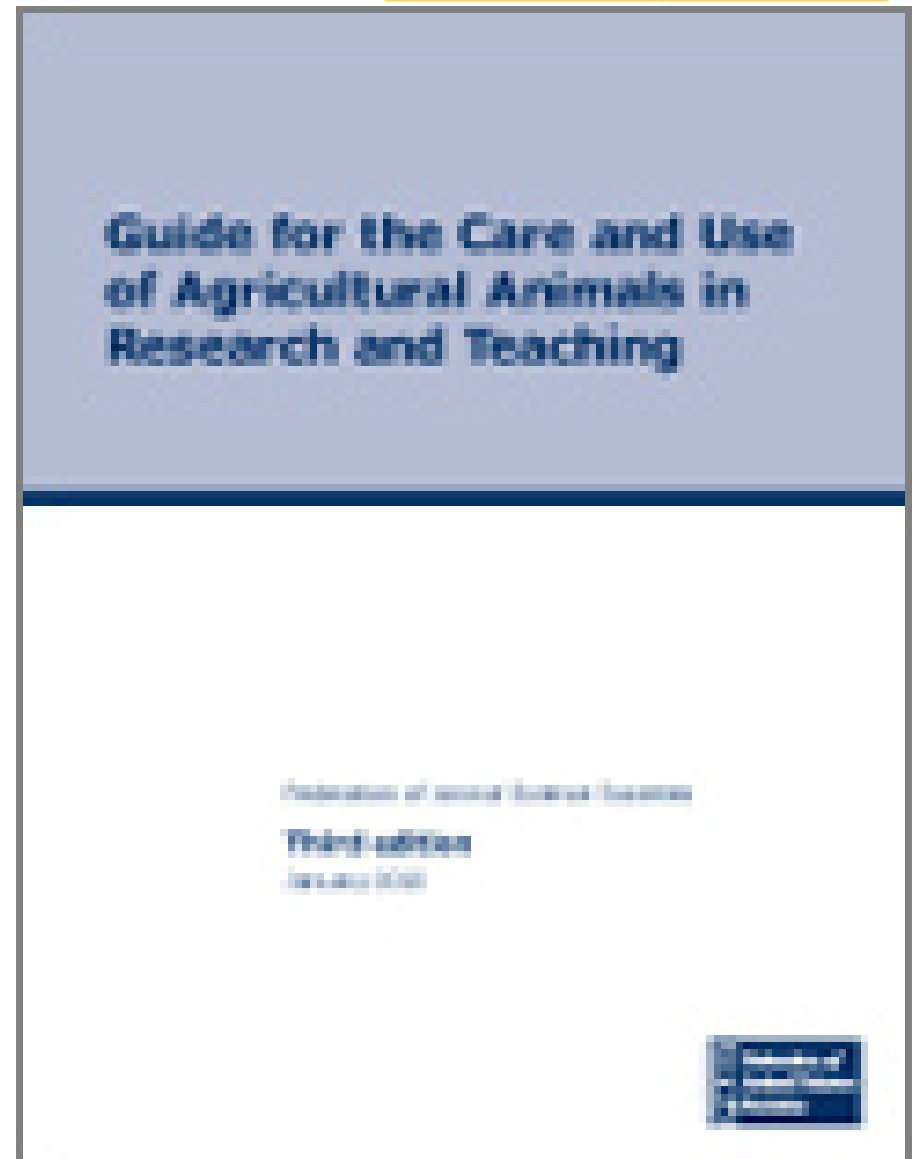
**Janice C. Swanson, PhD
John J. McGlone, PhD
Co-Chairs
2nd Revised Edition**

VISIT...

LANZAROTE
Caliente.COM



- First Edition 1988
- Second Edition (first revision) 1999
- Third Edition 2010



History

FASS

Facilitating Science

- Prior to the first edition, there was a lab animal guide, but no farm animal guide

**Guide for the Care and Use
of Agricultural Animals in
Research and Teaching**

Federation of Animal Science Societies

Third edition

January 2011



History

FASS

Facilitating Science

- Farm animals at universities, government labs and some pharmaceutical companies had only the lab animal guide – which was not suited to farm animals

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Third edition
January 2003



History

FASS

Facilitating Science

- On-farm guides were not available in 1988
- Some farm animal guides were developed using the FASS Ag Guide as a starting point
- There is no logical reason for requirements to differ on farms and in labs

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2010 *Ag Guide*

- 62 authors – all specialists in their species or areas
- Science-based animal care

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Subcommittee Chairs

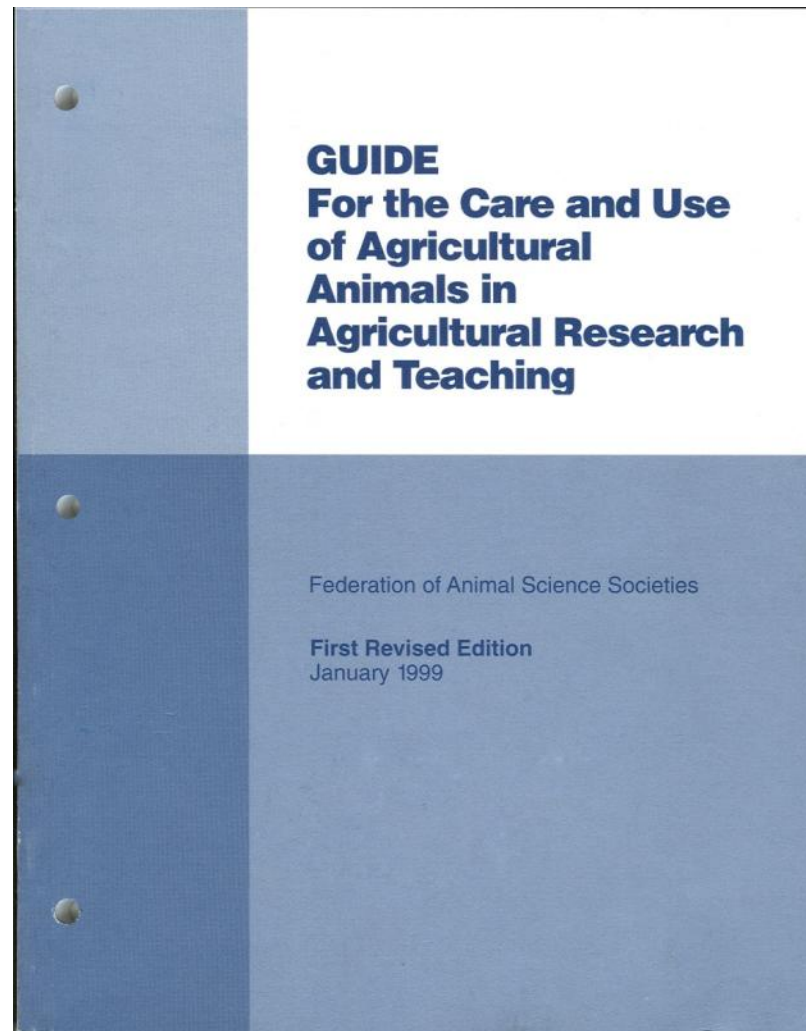
Topic

- | | |
|---|---|
| <ul style="list-style-type: none">• Steven Ford, PhD• Frank Mitloehner, PhD• Wendy Underwood, DVM• Temple Grandin, PhD• Joy Mench, PhD• Carolyn Stull, PhD• Pamela Ruegg, DVM• Patricia Hester, PhD• Greg Lewis, PhD• Terry Mader, PhD• Janeen Salak-Johnson, PhD | <ul style="list-style-type: none">• Institutional Policies• General Guidelines Husbandry & Facilities• Agricultural Animal Health• Transportation & Handling• Environmental Enrichment• Guidelines for Horse Husbandry• Guidelines for Dairy Cattle Husbandry• Guidelines for Poultry Husbandry• Guidelines for Sheep & Goat Husbandry• Guidelines for Beef Cattle Husbandry• Guidelines for Swine Husbandry |
|---|---|



**AAALAC, Intl
USDA**

APPROVED





Revision

**GUIDE
For the Care and Use
of Agricultural
Animals in
Agricultural Research
and Teaching**

Federation of Animal Science Societies

First Revised Edition
January 1999

2nd Revised Edition



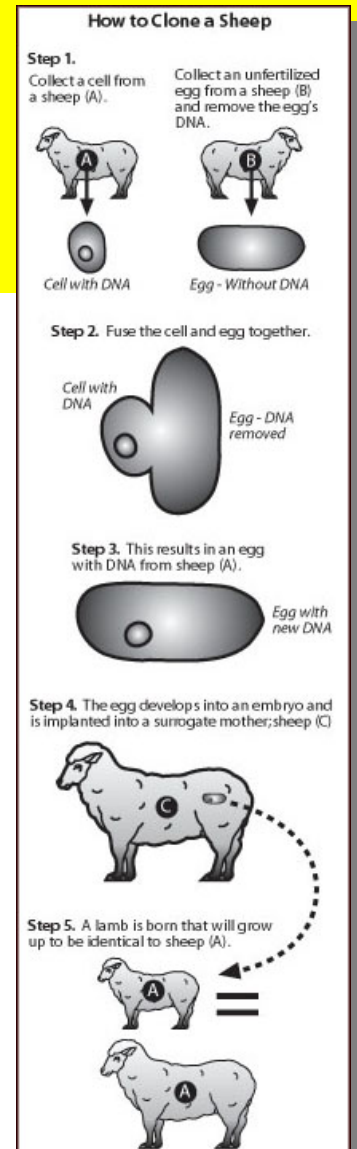
- **New Chapters**
 - Transportation and Handling
 - Environmental Enrichment
- **Deleted Chapter 4 & 11**
 - Physical Plant – combined with chapter 2
 - Veal Calf Husbandry
- **New information**
 - Genetically engineered and cloned livestock and poultry





Modern Technologies

- Addition of text concerning transgenic/genetically engineered and cloned animals





Examples

FASS

Facilitating Science

Floor Space Requirements for Groups of Growing Pigs

	square feet per pig “required”	
Pig Wt, lb	Ag Guide, FASS 2010*	SCH, NPB 2003
30	2.0	2.5
100	4.6	5
280	9.1	8

* From the general formula: $\text{area} = 0.033 \text{ BW}^{0.67}$



Floor Space Requirements for Transport of Growing Pigs

	square feet per pig “required”	
Pig Wt, lb	Ag Guide, FASS 2010*	SCH, NPB 2003
250	5.0	4.26
300	6.0	4.79
400	7.0	6.39

* Gives more space in summer than winter to transported pigs



To download a free copy of the entire Ag
Guide or any chapter:

<http://www.fass.org/page.asp?pageID=216>





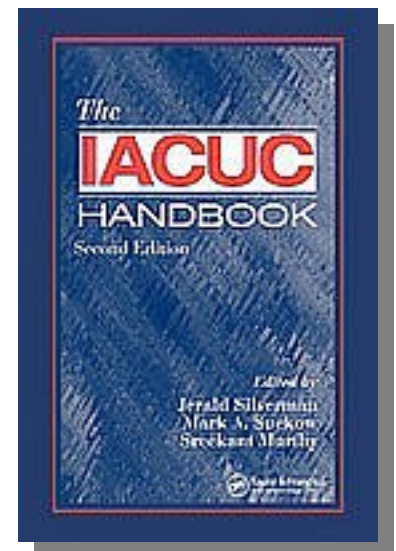
The End



Chapter 1: Institutional Policies

Steven Ford, University of Wyoming

- James Swearingen, AAALAC, Intl
- Don Lay, USDA-ARS
- W. Ronald Butler, Cornell University
- Frank Bartol, Auburn University





Chapter 1: Institutional Policies

- Provide more clarity to issues regarding
 - Client-owned or animals not owned by the institution
- Eliminate wording that cause points of confusion or overly prescribe
- Updated reference sources describing current practices and procedures



Chapter 2: General Guidelines for Animal Husbandry and Facilities Frank Mitloehner, UC-Davis

- Jim Swearegen, AAALAC, Intl
- Curt Gooch, Cornell University
- Pius Mwangi Ndewga, Washington State University
- Larry Jacobson, University of Minnesota



Chapter 2: General Guideline for Animal Husbandry and Facilities

- **New title**
 - Chapters 2 and 4 of 1st revised edition combined and re-titled
 - Facilities is inclusive of housing





Revisions: Chapters 2 & 4...

- Section on environmental enrichment was omitted from the new Chapter 2
 - Reason: to avoid duplication with new chapter on environmental enrichment.
- Section “Temperature, water vapor pressure, and ventilation” has been moved after section on “Macroenvironment and microenvironment”



Revisions: Chapter 2 & 4 ...

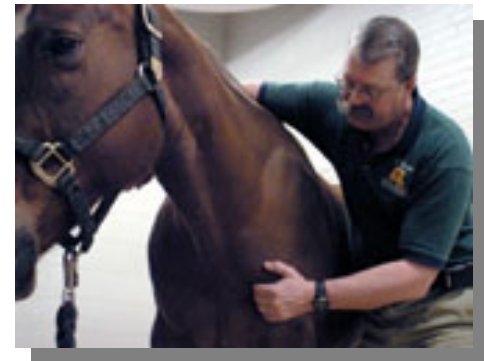
- A section on bio-security was added
- Additionally, revision suggestions that were brought forward by the public (e.g., Humane Society) were fully considered and largely implemented.
- Literature and references updated



Chapter 3: Agricultural Animal Health Care

Wendy Underwood, Eli Lilly

- Michael Bailey, Cornell University
- S. Peter Cuneo, University of Arizona
- Steven Berry, U-C Davis
- Gail Golab, AVMA





Chapter 3: Agricultural Animal Health Care

- Large portions of Ch 2 combined with Ch 3
 - Husbandry
 - Standard Agricultural Practices,
 - Emergency care
 - Restraint and transportation





Revisions: Chapter 3: Ag Animal Health Care ...

- Ch 3 reorganized
 - Procurement, acclimation, quarantine
 - Husbandry
 - Veterinary Care
 - Surgery
 - Euthanasia and Slaughter



Revisions: Chapter 3: Ag Animal Health Care ...

- Procurement, acclimation and quarantine
 - AV should develop Guidelines
 - Exemptions from SOP must be justified and approved by IACUC
 - Exemptions to quarantine process approved by AV



Revisions: Chapter 3: Ag Animal Health Care ...

- Husbandry
 - Personnel qualifications must be documented
 - Disaster plan must be developed
 - Requirements for feed storage enhanced
- Info on animal identification expanded





Revisions: Chapter 3: Ag Animal Health Care ...

- Veterinary Care
 - The AV is responsible for the Health Care Program
 - AV authority to oversee all aspects of research animal care
 - Defines AV roles and responsibilities
 - Enhanced definition of adequate health care
 - Animal care personnel must be trained to recognize signs of disease, illness and pain.
 - Section on Medical Records was greatly expanded.



Revisions: Chapter 3: Ag Animal Health Care ...

- Surgery
 - The AV should advise use of anesthetics/analgesics
 - Guidance on use of tranquilizers
 - Emphasis on husbandry/facilities for recovery
 - Surgical training program MUST be approved by IACUC
 - Requirements for post surgical care defined.
 - Discussion of severe/chronic pain enhanced





Revisions: Chapter 3: Ag Animal Health Care ...

- Residue Avoidance
 - Record keeping requirements defined
 - Requirement for implementation of Quality Assurance Programs emphasized.
 - Definition of Extra Label Use clarified.
- Recommendations for use/storage of Hazardous chemicals enhanced.



Revisions: Chapter 3: Ag Animal Health Care ...

- Restraint
 - Addition that personnel using hydraulically operated restraint equipment be properly trained.
- Transgenics
 - Entirely new section
 - Definition of transgenic and genetically modified animals
 - CLEARLY STATES THAT: “The scientist is responsible for identifying physiologic and/or phenotypic changes and must have a plan to address changes that affect animal health to facilitate and ensure animal welfare.”



Revisions: Chapter 3: Ag Animal Health Care ...

- Euthanasia and Slaughter
 - Personnel must have training and experience
 - Emphasis on captive bolt training and maintenance of equipment
 - Emphasis on confirmation of death.
 - Discussion of use of electrocution
 - Emphasis on ensuring adequacy of 'stunning' for euthanasia of farm animals intended for food supply



Chapter 5: Guidelines for Beef Cattle Husbandry

Terry Mader, University of Nebraska

- Allen Trenkle, Iowa State University
- James Oltjen, UC-Davis
- Tami Brown – Brandl, USDA-ARS
- Larry Hollis, Kansas State University
- John Arthington, University of Florida



Chapter 5: Guidelines for Beef Cattle..

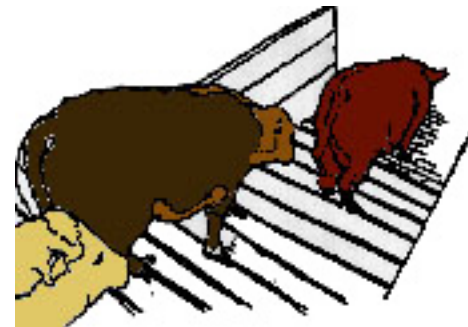
- Followed similar section format and updated information and references
- Provided an assessment of ideal and adverse thermal conditions associated with beef cattle production
- Outline thermal indices which could be useful for characterizing environmental stress in beef cattle





Revisions: Chapter 5: Beef Cattle...

- Added section: genetically modified and cloned beef cattle
- Added section: identification methods and implanting
- Updated sections on dehorning and castration
- Section on transport and handling removed to new chapter on this subject





Chapter 6: Guidelines for Dairy Cattle Husbandry

Pamela Ruegg, University of Wisconsin

- Bill Bickert, Michigan State University
- Randy Shaver, University of Wisconsin
- Nigel Cook, University of Wisconsin
- Susan Eicher, USDA-ARS
- Paul Fricke, University of Wisconsin
- Sheila McGuirk, University of Wisconsin
- Doug Reinemann, University of Wisconsin



Chapter 6: Guidelines for Dairy Cattle...

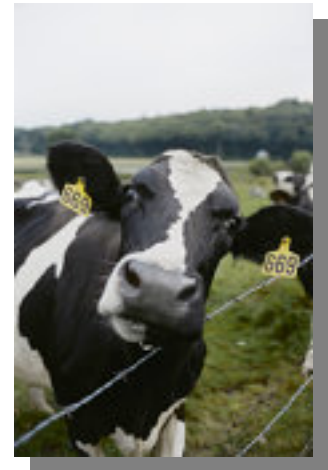
- Similar format with updates and additions
 - Tables and references
- Significant enhancement to the following sections:
 - Tail docking statement
 - Noise and music
 - Milking machine and udder sanitation procedures





Revisions: Chapter 6: Dairy Cattle...

- Foot care section
 - More science based recommendations
 - Evaluation criteria
 - Hoof care recommendations
- Social Environment
 - More detailed information with respect to preventing aversive social situations
- Ventilation
- More detailed information of calf care (with deletion of the veal calf chapter)





Chapter 7: Guidelines for Horse Husbandry

Carolyn Stull, UC Davis

- Anne Rodiek, Calif. State University- Fresno
- Bob Coleman, University of Kentucky
- Sarah Ralston, Rutgers University
- Don Topliff, West Texas A&M University
- Suzanne Millman, Iowa State University



Chapter 7: Guidelines for Horse...

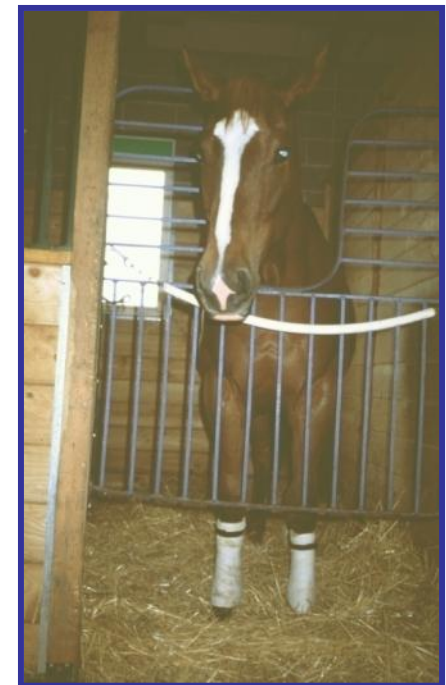
- Followed original section outline
- Environment and Facilities section
 - New! Manage high-traffic areas
 - Mud/wetness during wet periods
 - No changes to dimensions and size of accommodations





Revisions: Chapter 7: Horses....

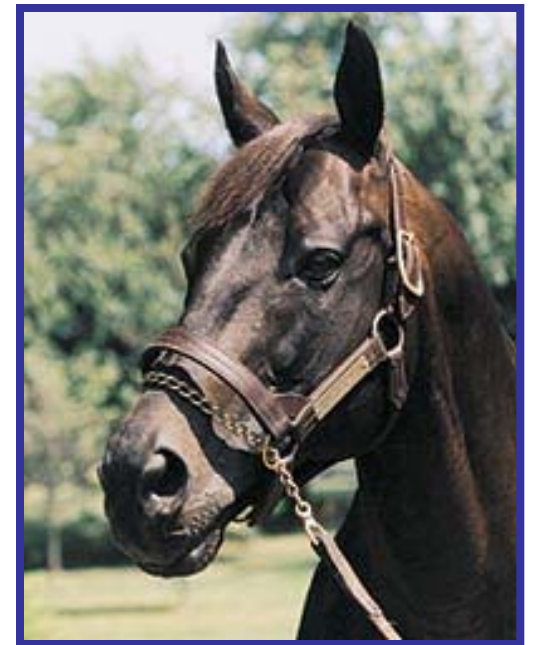
- Feed and Water refocused
 - Provide feed and water in a manner that accommodates natural behavior
 - Assists in alleviating digestive maladies (Colic, laminitis and obesity)
 - Principles of digestion at several life stages described
- Social environment focus on behavior in confinement housing





Revisions: Chapter 7: Horses....

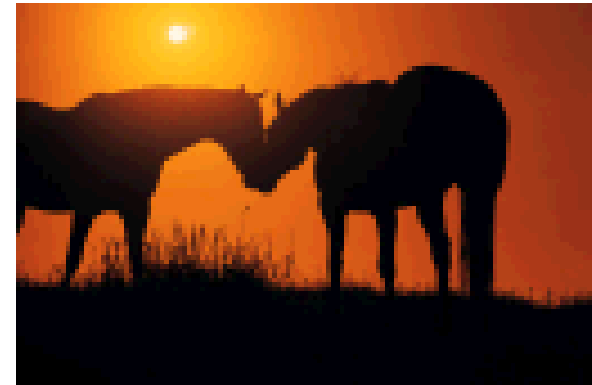
- Husbandry: sections on exercise, grooming, hoof care, and health
 - Vaccination, parasite control, teeth floating, and foaling (new)
- Restraints section enhanced
 - How and when to use restraint
- New sections
 - Identification
 - Recognizing signs of acute and chronic pain and distress





Revisions: Chapter 7: Horses....

- Euthanasia section more information regarding:
 - Training of personnel
 - Appropriate methods
 - Methods for emergencies
 - Vital signs to confirm death





Chapter 8: Guidelines for Poultry Husbandry

Patricia Hester, Purdue University

- Inma Estevez, Ph.D., University of Maryland
- Ken Koelkebeck, Ph.D., University of Illinois
- Carl Mike Turk, M.S., Maple Leaf Farms, IN
- Bruce Webster, Ph.D., University of Georgia
- Sally Noll, Ph.D., University of Minnesota
- Ken Anderson, Ph.D., North Carolina State U.
- Robert Porter, Ph.D., DVM, University of Minnesota



Chapter 8: Guidelines for Poultry...

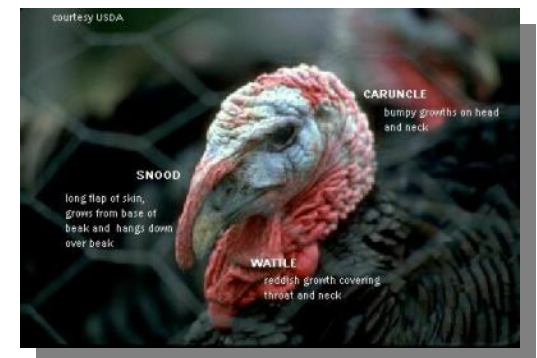
- All sections updated and expanded
- Section on alternative housing enhanced
 - Furnished cages
 - Aviaries
 - Outdoor or free range access
- Feed restriction on broiler breeders
 - Noz bonz use





Revision: Chapter 8: Poultry...

- New sections
 - Perches
 - Nests
 - Semen collection and insemination
- Standard agricultural practices: added sections
 - Snood removal
 - Wattle removal
 - Pinioning
 - Non-feed removal molting



Revision: Chapter 8: Poultry...

- Euthanasia and Slaughter: expanded
 - Use of gas
- Special considerations: added
 - Genetically modified birds
 - Intra- thoracic and intra-abdominal surgeries-caponization
- Number of tables increased to make them more user friendly
 - Existing tables updated and separated
 - One table each for feed, water and space allowances for each species of poultry





Chapter 9: Guidelines for Sheep and Goat Husbandry

Greg Lewis, USDA-ARS

- William Gavin, GTC Biotherapeutics
- Arthur Geotsch, Langston University
- Paul Kuber, The Ohio State University
- J. Bret Taylor, USDA-ARS
- Michael Thonney, Cornell University

Chapter 9: Guidelines for Sheep and Goats..

- Sheep & goats may have similar management
 - Different genus and species
 - Behavior, foraging, diet selection, metabolic requirements, growth, physiology differ
 - Training and experience of caretakers consistent with requirements of each species





Revisions: Chapter 9: Sheep & Goats...

- Management and care may be site specific
- Feed and water recommendations update with NRC recommendations (2007)
- Parasite control revised reflect newly emerged issue of internal parasite resistance to anthelmintics
- Shearing recommendations revised
 - Lambing (benefit) and the reduction of lateral disease transmission during shearing



Revisions: Chapter 9: Sheep & Goats...

- Definitive guidelines on docking lamb tails and length of docked tail
- New sections:
 - Social environment
 - Dairy sheep and goats
 - Zoonotic disease
 - Lairage and harvest
 - Biosecurity
 - Transgenics and cloning





Chapter 10: Guidelines for Swine Husbandry

Janeen Salak-Johnson, University of Illinois

- Joe Cassady, North Carolina State U.
- Matt Wheeler, University of Illinois
- Anne Butters-Johnson, Iowa State University



Chapter 10: Guidelines for Swine..

- Major revision
 - Housing systems
- New sections addressing
 - Microclimate
 - Biomedical research





Revisions: Chapter 10: Guidelines for Swine...

- Facilities and Environment section expanded
 - Microenvironment
 - Thermal needs and ventilation
 - Lighting – photoperiods effects
- Husbandry section re-organized and enhanced
 - Nursery systems
 - Growing finishing systems
 - Space allowances - indoor engineering/ outdoor performance based
 - Breeding and gestation systems
 - Individual and group housing





Revisions: Chapter 10: Guidelines for Swine...

- Handling and Transport section enhanced
 - Caretaker training and attitude sections
 - Sections addressing alley ways, load out, flooring, chute angles, lighting,
 - Transportation
 - Non-ambulatory pigs
- New section: Special Considerations
 - Housing of swine on biomedical protocols in agricultural facilities
 - Discussion of ILAR Guide and FASS Guide





New Chapters



FASS

Facilitating Science

Environmental Enrichment

Joy Mench, U-C Davis

- Ruth Newberry, Washington State University
- Suzanne Millman, Iowa State University
- Cassandra Tucker, U-C Davis
- Larry Katz, Rutgers University



New Chapter: Environmental Enrichment

- Definition of enrichment: enhancement of animal's social or physical environment that improves the animal's biological functioning
- Goals of enrichment
 - Increasing number and range of normal behaviors
 - Reducing abnormal behaviors
 - Increasing positive utilization of environment
 - Increasing animal's ability to cope with behavioral and physiological challenges



Environmental Enrichment...

- Suggestions for enrichment: all species
 - Socialization to humans
 - Occupational enrichment
 - Physical enrichment
 - Sensory enrichment
 - Nutritional enrichment
- General considerations
 - Outcome assessment
 - Training observers to assess outcomes
 - Practical considerations (animal health and safety)
 - Need for collaboration and consultation

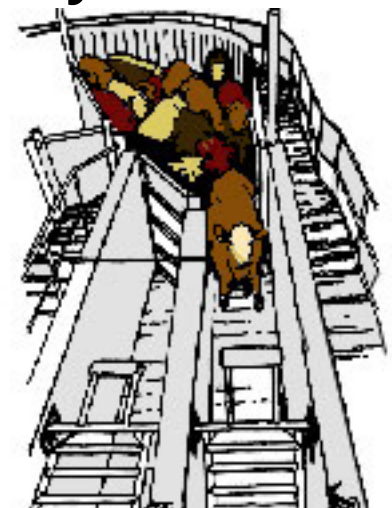




Transportation and Handling

Temple Grandin, Colorado State University

- Joseph Stookey, University of Saskatchewan
- Mhairi Sutherland, Texas Tech University
- Bruce Webster, University of Georgia
- Carolyn Stull, U-C Davis
- Jeffrey Hill, PhD





Facilitating Science

New Chapter: Transportation and Handling

- Covers all species
 - More extensive coverage of topic
- Principles of animal handling
 - Behaviors and flight zones
 - New addition: moving aids
 - Animal perception – visual distractions
- Facility design, equipment
 - Maintenance and sanitation



New Chapter: Transportation and Handling...

- General principles of animal restraint
 - Emphasis on preventing agitation and excitement
- Handling of non-ambulatory animals
- Transportation
 - Updated tables on space allowance and thermal requirements
 - Vehicular recommendations
- Lairage prior to slaughter
- Emergency procedures





Chapter 4: Physical Plant

Chapter 11: Guidelines for Veal Calf Husbandry

- **Chapters eliminated**
 - Chapter 4 combined with 2
 - Chapter 11
 - calf care is addressed in the dairy and beef cattle husbandry chapters



Timeline

- Subcommittee completes review June 2008
- Presentation to FASS societies and other professional and scientific groups
- Receive and address comments
- Final document January 2009
 - Downloadable pdf on FASS website



Thank You

Questions